SURVEILLANCE METHOD AND SYSTEM

Related Applications

5   This nonprovisional application claims priority to, and hereby incorporates, Provisional Application No. 60/213,048, and only to the extent needed for pendency, this is alternatively a conversion of Provisional Application No. 60/213,048, filed on June 21, 2000.

This application is related to, and fully incorporates by reference, U.S. Patent

10   Application Serial No. 09/176,994, entitled "Video Communication/Monitoring Apparatus And Method Therefor," filed October 22, 1998 (Docket No. 8X8S.211PA), U.S. Patent Application Serial No. 08/977,568, entitled "Video Conferencing Extension Unit for Peripheral Interfaces," filed November 25, 1997 (Docket No. 1161.52-US-01), U.S. Provisional Application Serial No. 60/212,953 filed June 21, 2000, now concurrently

15   filed herewith as U.S. Nonprovisional Patent Application Serial No. 09/_____, _____, entitled "Personal Alert Surveillance" (Docket No. 8X8S.225PA), and U.S. Patent Application Serial No. 08/975,768, entitled "Computer Architecture for Video Data Processing and Method Thereof," filed November 21, 1997 (Docket No. 8X8S.82US01).

20   **Field of the Invention**

The present invention relates to image communication systems, and more particularly, to video communication involving monitoring and security applications.

Background of the invention

Image communication systems span a variety of applications. One such application is security monitoring. Security monitoring typically involves system control and display functions located at a central station. The central station includes multiple video-

5 communication paths, each path connecting to a remotely-located display camera. Traditionally, the significant expense of security monitoring systems has limited their practicability to larger facilities.

Recent developments in communication standards and compression / decompression techniques have permitted enhanced security-system implementations.

10 One approach involves using a remote camera that responds to changes in motion or audio as a determining factor for transmitting captured video and audio data to the control station. Another approach uses a remote server station that connects to several cameras, with the server station coupling to a telephone line for reporting back to the control station. These and other recent implementations are directed to markets ranging from retail shops

15 to large industrial warehouses.

Widespread acceptance and usage of security-system implementations are largely a function of the difficulty of system implementation and the cost, and therefore have largely been limited to commercial markets. The systems described above are difficult to implement in many respects. Often, such systems are difficult to install and operate, in

20 part due to their complexity and lack of user-friendly operation. In addition, the complexity of such systems also adds to the initial purchase cost and complicates the

installation process, adding more cost. The operation of such systems may also require

monitoring, adding still more cost.

    As with most other systems, reduced cost is realized through cost-effective mass

production. The initial costs to effect such a mass production, however, can be exorbitant.

5   Moreover, widespread acceptance and usage of such technology cannot be forced, even

when appropriately addressing the marketing needs and overcoming the exorbitant costs of

the mass production equipment. Consequently, efforts to launch the appropriate

technology for practicable acceptance and usage of security systems has been difficult.

Therefore, there is a need for a low-cost, user-friendly security system that is easy to

10   implement.

Summary of the Invention

    The present invention is exemplified in a number of implementations and

applications, one of which is summarized below. According to an example embodiment,

15   the present invention is directed to a low-cost surveillance method and system easily

adaptable for personal or small-entity use. A first communications system is

communicatively coupled and adapted to deliver a request for image data, such as a request

sent via a telephone, to a programmable surveillance system having a first computer

arrangement and a camera. The first computer arrangement is adapted to process data

20   including image data, and the camera is configured and arranged to capture images that are

processed as data by the first computer arrangement. In response to the request from the

first communications system, the programmable surveillance system automatically

accesses and delivers image data to a second communications system coupled and adapted to transmit image data, such as via the Internet. A second computer arrangement is adapted to communicatively couple with the second communications system and to receive and process data including the image data delivered by the first computer arrangement.

5   The above summary of the present invention is not intended to describe each illustrated embodiment or every implementation of the present invention. The figures and following detailed description more particularly exemplify these embodiments.

Brief Description of the Drawings

10   The invention may be more completely understood in consideration of the following detailed description of various embodiments of the invention in connection with the accompanying drawings, in which:

FIG. 1 is a surveillance system, according to an example embodiment of the present invention;

15   FIG. 2 is another surveillance system, according to an example embodiment of the present invention; and

FIG. 3 is a flow diagram showing a method for surveillance, according to another example embodiment of the present invention.

While the invention is amenable to various modifications and alternative forms,

20   specifics thereof have been shown by way of example in the drawings and will be described in detail. It should be understood, however, that the intention is not to limit the invention to the particular embodiments described. On the contrary, the intention is to

cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.

Detailed Description

5   The present invention is applicable to a variety of different types of security-monitoring applications, and the invention has been found to be particularly advantageous for applications requiring, or benefiting from, cost-effective on-demand personal security monitoring applications. According to an example embodiment of the present invention, a video camera is located in a monitoring location, such as a retail establishment. The video

10   camera is connected to a first computer arrangement adapted to receive image data captured by the video camera. A remote user contacts the first computer arrangement via a first communications system, such as a plain-old-telephone-system (POTS), and delivers a request for image data to the first computer arrangement. In response to the request, the first computer arrangement accesses images received from the video camera, connects to a

15   second communications system, such as a system including the Internet, and transfers the image data via the second communications system to a second computer arrangement. The second computer arrangement is adapted to receive the image data from the first computer arrangement, and to display the image data for monitoring. In this manner, remote monitoring of the retail establishment is facilitated using simple computer arrangements

20   and relatively inexpensive and easily accessible communications systems.

The above described example embodiment can be implemented in a variety of methods. For example, FIG. 1 shows a system 100 for remote security monitoring. A

request for image data is sent via a first communications system 110 to a programmable

surveillance system 130 from a communications device 140. The programmable

surveillance system 130 captures image data and, in response to the request, delivers the

image data to a second communications system 120. A computer monitoring arrangement

5   150 is coupled to the second communications system 120 and is adapted to receive the

image data delivered by the surveillance system 130.

In one particular example embodiment, the communications device 140 includes a

telephone, and the first communications system 110 includes a POTS. A remote user calls

the programmable surveillance system using the telephone, and sends a request for image

10   data via the first communications system 110. The request may include a variety of data.

For instance, the request may include a caller ID number. The programmable surveillance

system is programmed with one or more caller ID numbers corresponding to remote user

telephone communication sources. Upon receiving the call, the programmable surveillance

system is adapted to determine the caller ID number and compare it with the programmed

15   caller ID numbers. In response to finding a matching caller ID, the programmable

surveillance system accesses and delivers image data.

In another example embodiment, the request includes an access code. For example,

the access code may include a code that can be entered using a touch-tone phone. When a

remote user calls the programmable surveillance system 130 using a telephone, the remote

20   user enters a code via the touch-tone keypad of the telephone. The programmable

surveillance system 130 is programmed with one or more access codes, and compares the

code entered by the remote user to the programmed access codes. Upon finding a matching code, the programmable surveillance system accesses and delivers image data.

In another example embodiment, the request includes a selection from a menu. The programmable surveillance system is programmed with a menu having selections. The

5   menu selections include options for delivering the image data, such as the type of data to be delivered and the method in which to deliver the data. For example, a plurality of image capture devices may be coupled to the programmable surveillance system, and the menu selections may include selecting which one or ones of the images captured will be delivered. This is particularly useful for security monitoring or supervision of a plurality

10   of locations, such as retail establishments and/or manufacturing facilities. The menu selections may also include a choice of delivery destinations, such as to a particular Internet server, a particular telephone line, or a particular computer coupled to the programmable surveillance system via a network.

Several example programmable surveillance system components, communications

15   systems, and monitoring arrangements adaptable for use in connection with example embodiments of the present invention are shown in FIG. 2. For example, with slight programming modifications, the programmable surveillance system 100 can be implemented using any or a combination of various products (units and/or software packages) available from Netergy Networks, Inc. (formerly 8x8, Inc.) of Santa Clara, CA.

20   Such models include the VC50, VC105, VC110, VC150, VC160, and RSM-1500. For informational brochures for models VC110, VC160, and RSM-1500, reference may be made to appendices A, B, and C in U.S. Provisional Application Serial No. 60/212,953

filed June 21, 2000, now concurrently filed herewith as U.S. Nonprovisional Patent

Application Serial No. 09/_____, _____, entitled "Personal Alert Surveillance"

(Docket No. 8X8S.225PA), which is incorporated herein by reference. Models included

in the referenced appendix are shown as part of arrangements 250, 260, 270, 282, 283,

5   and 284.

These above products include a video processor architecture based on a multiple

processor chip having uniquely arranged RISC and DSP type processors. While this type

of chip is not required for implementation of the above-characterized embodiments, those

familiar with current marketplace trends in video processing will appreciate the benefits

10   these arrangements provide. For additional information concerning such video processing

arrangements, reference may be made to the characterization of these architectures, as well

as other security-related features, in U.S. Patent Application Serial No. 09/176,994,

entitled "Video Communication / Monitoring Apparatus And Method Therefor," filed

October 22, 1998 (Docket No. 8X8S.211PA).

15   FIG. 3 is a flow diagram exemplifying particular embodiments of the present

invention. At block 310, a request for image data is delivered to a first computer terminal

via a communications system. The request is received at the first terminal at block 320,

and the first terminal accesses image data in response to the request at block 330.

Accessing the image data may, for example, include accessing stored data, or may include

20   gathering new data. At block 340, the accessed image data is transferred via a

communications system, and the transferred data is received and viewed at a second

terminal 350.

In another more particular example embodiment, the programmable surveillance system is further programmed to include pre-programmed delivery information that can be associated with each programmed caller ID number or access code. The delivery information includes instructions for one or more delivery options available to the

5   programmable surveillance system. For example, one delivery option includes terminating the incoming call from the remote user, automatically calling the remote user back via the same or other communications system, and delivering image data captured at the camera to the remote user.

Another delivery option includes connecting to the second communications system,

10   wherein the second communications system includes the Internet, and delivering the image data via an Internet service provider (ISP) to the computer monitoring arrangement 150. Such Internet delivery may include streaming video such as that supported by RealAudio. The ISP may be contacted using a telephone modem used to receive the request, wherein the programmable surveillance system hangs up and dials the ISP, or a second

15   communications system may be used, such as having another POTS line, DSL line, cable modem, or other Internet access system.

Yet another delivery option includes connecting to the computer monitoring arrangement 150 via the second communications system, wherein the second communications system includes a POTS, and delivering the image data via the POTS.

20   Other delivery or request communications systems may include wireless systems, paging systems, or email systems.

Various image data forms are readily adaptable for use in accordance with the

present invention. For example, the image data may be delivered as streaming video over

the Internet, wherein the computer monitoring arrangement 150 is adapted to receive and

display the streaming video. In another example, the programmable surveillance system is

5   further configured to capture audio, the image data includes audio data, and the second

computer arrangement is adapted to process and play the audio. The image data may also

protected, such as via encryption or via a password. The computer monitoring

arrangement is adapted to receive the protected data and decrypt or decode the password

protection of the image data. Compression methods may also be used, wherein the image

10   data is compressed prior to delivery to the monitoring location, and is decompressed at the

monitoring location for viewing.

While the present invention has been described with reference to several particular

example embodiments, those skilled in the art will recognize that many changes may be

made to the present invention without departing from the spirit and scope of the present

15   invention, which is set forth in the following claims.